Predictive Crypto Crashes and Asset Pricing Implications: An Inelastic Market Perspective

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Summary

Objective: this paper examines the prediction of crashes in cryptocurrencies based on a feature of inelastic capital in blockchains .

Methods: price swing, the maximum price runup and price drawdown experienced by a cryptocurrency during a period

Sample: 4284 cryptocurrencies from 2014 to May 2024

Findings:

- Cryptos in the most inelastic quintile exhibit a significantly higher crash risk than those in the most elastic quintile
- An elastic-minus-inelastic strategy generates a significant out-of-sample weekly return of 2.5%.
- This elastic winner-minus-inelastic loser strategy can generate a highly significant weekly return of 3.4%
- Using the 50 largest Initial Coin Offerings conducted on the Ethereum blockchain as an exogeneous shock, treated cryptos exhibit higher pirce swings and deliver a negative cumulative return.

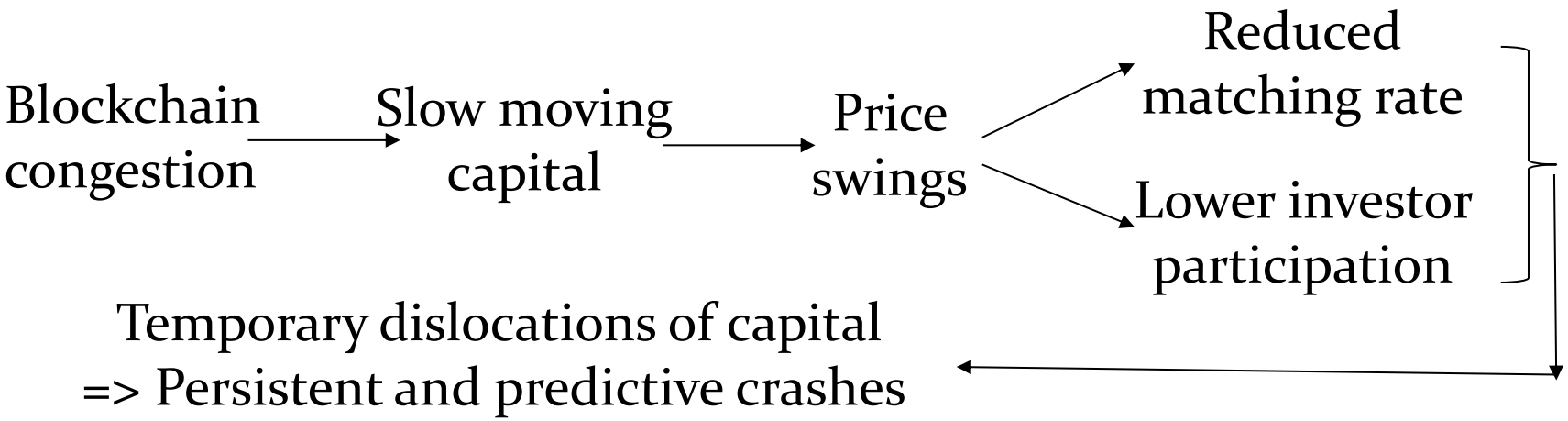
Comments

81 pages, 5 figures, 22 tables, and a search-based model !

1. Hypothesis of slow moving capital
2. Measurement of inelasticity
3. Identification test of blockchain-based mechanism
4. Elastic Winner-minus-Inelastic Loser strategy

1.Hypothesis of slow moving capital

This study considers a search-based framework that links slow-moving capital to network effects in cryptocurrency markets



1) What **triggers blockchain congestion**?
2) What if something leads to **both blockchain congestion and crypto crashes**? (identification)
3) There are many other factors that result in price swings. To what extent, price swings are **explained** by slow moving capital.

2.Measurement of inelasticity

Intuition: when capital is slow, shocks generate large price swings (i.e., sharp price movements followed by partial reversals).

1. They define the *MaxRunup* and *MaxDrawdown* of cryptocurrency returns.

   $$MaxRunup=(P_{t-1}/P_{min}-1)*365/\#Days$$

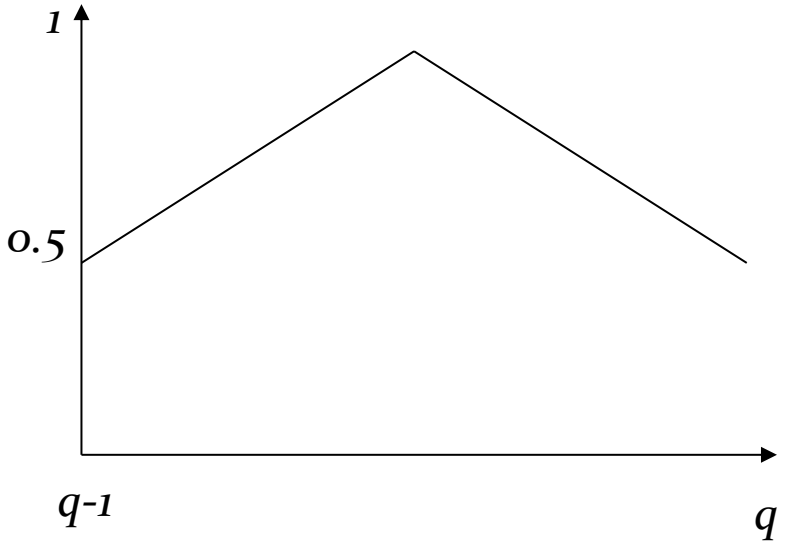
   $$MaxDrawdown=(P_{t-1}/P_{\max}-1)*365/\#Days$$

2. They obtain the cryptocurrencies' ranks for the magnitude of their *MaxRunup* and *MaxDrawdown*

3. InRank=($Rankrunup+Rankdrawdown$)/2.

2.Measurement of inelasticity

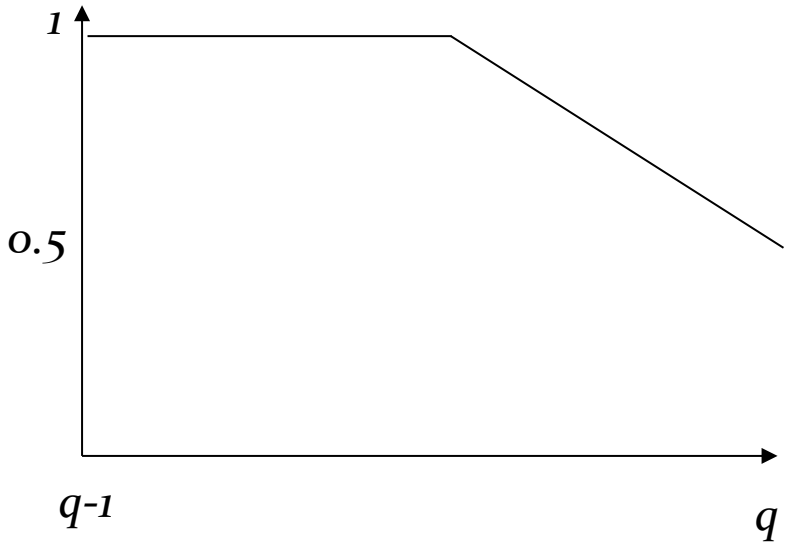
A



MaxRunup=0

*MaxDrawdown=(0.5–1)*365/45*

B



MaxRunup=0

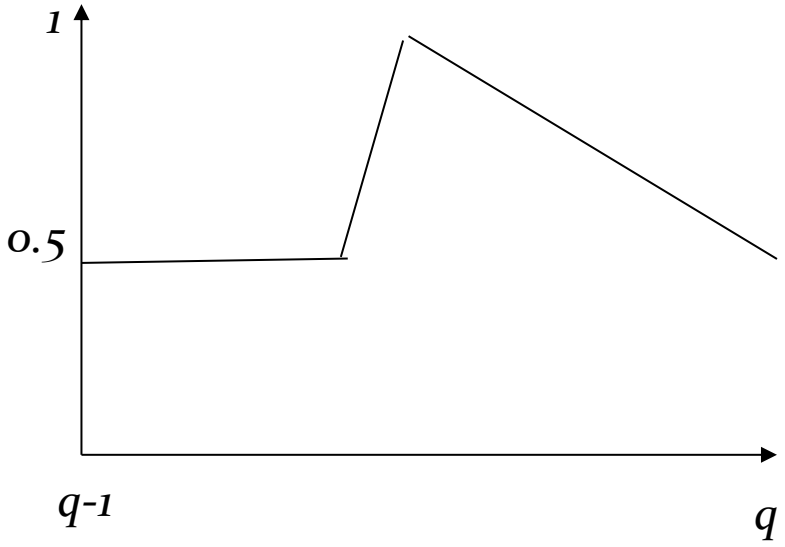
*MaxDrawdown=(0.5–1)*365/45*

$$IRank_A = IRank_B$$

According the definition of price swings, should we expect a **larger** value of A than B?

2.Measurement of inelasticity

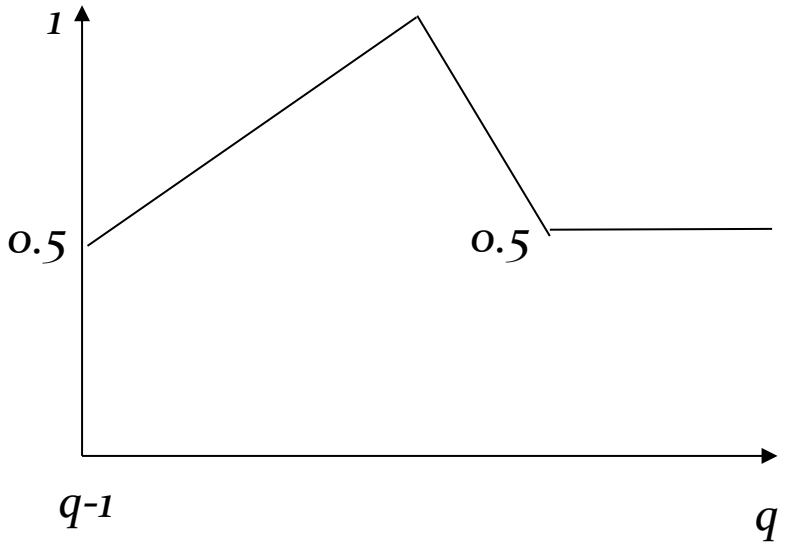
A



MaxRunup=0

*MaxDrawdown=(0.5–1)*365/45*

B



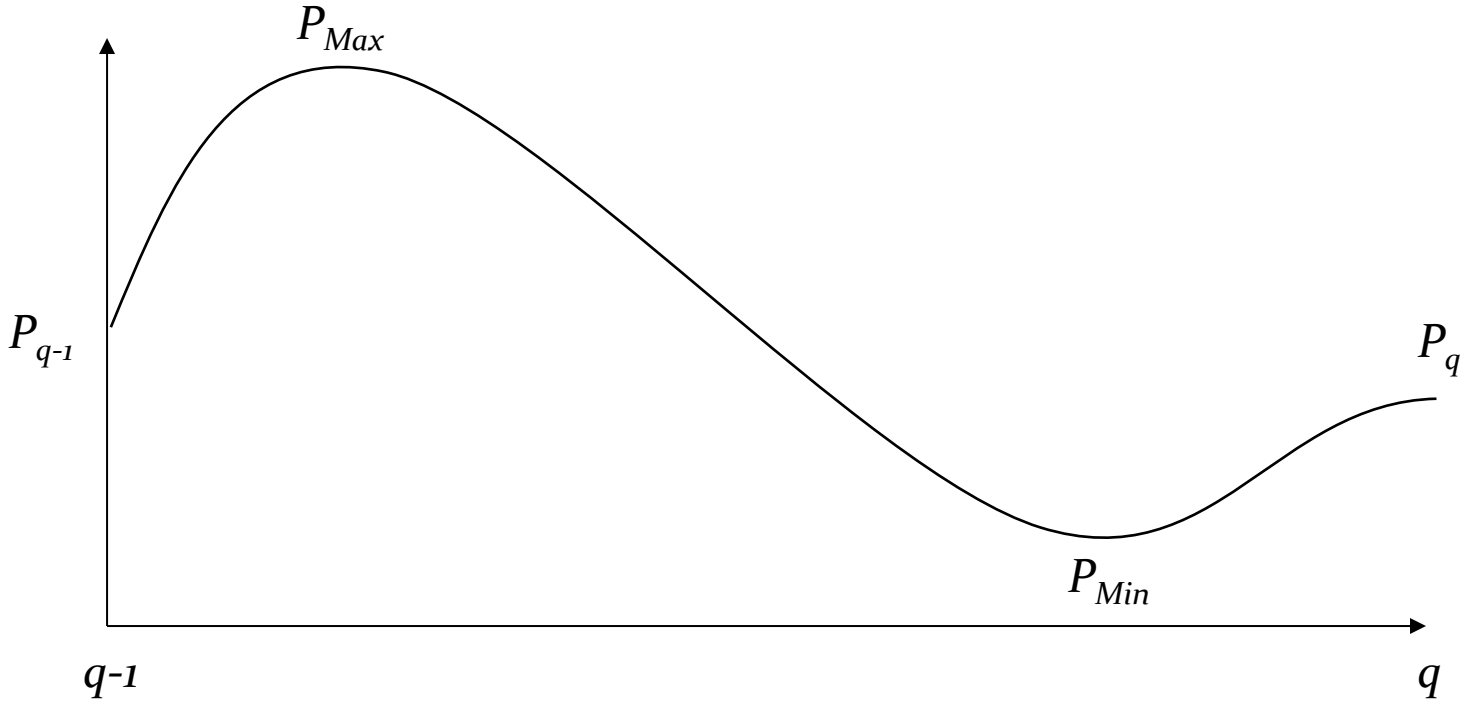
MaxRunup=0

*MaxDrawdown=(0.5–1)*365/20*

$$IRank_A < IRank_B$$

According the definition of price swings, should we expect a **larger** value of A than B?

2.Measurement of inelasticity

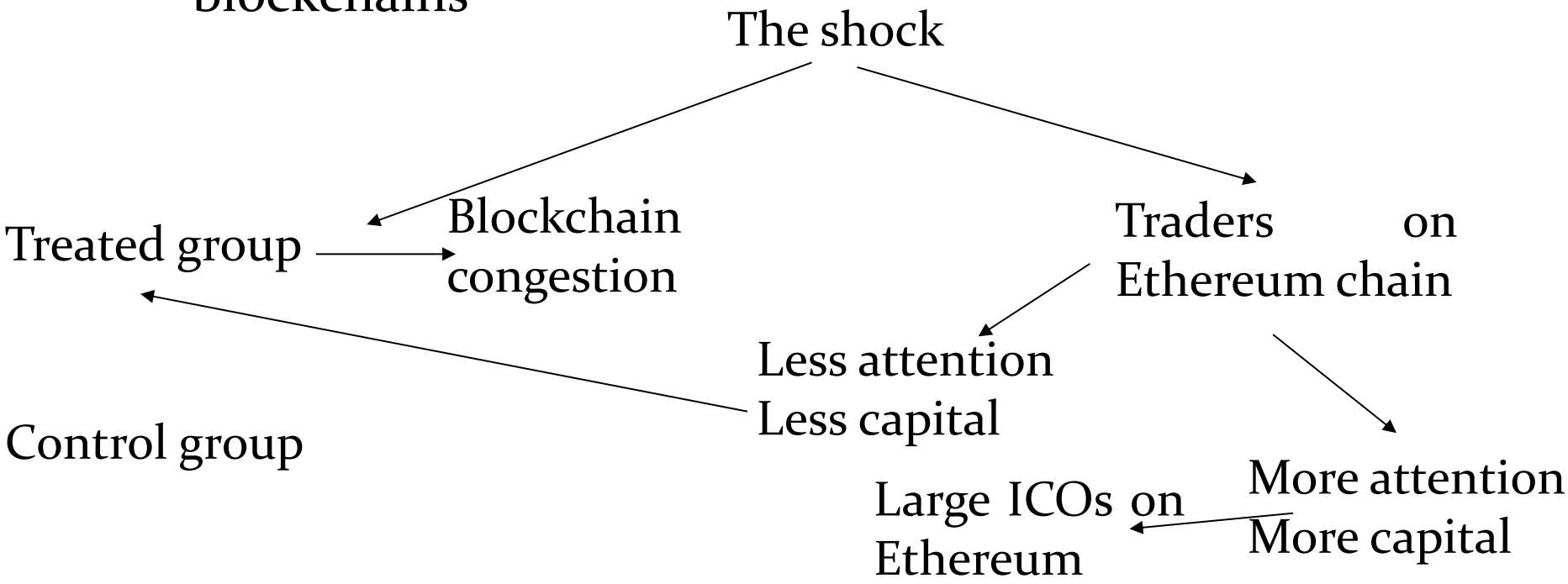


1) We can use P_{Max}/P_{q-1} and P_q/P_{max}, and P_{Min}/P_{q-1} and P_q/P_{Min} to build a similar measure.
2) We can throw the pattern into AI platforms and generate a price swing score.

3.Identificaiton test of blockchain-based mechanism

The study employs the top 50 ICOs built on Ethereum according to the amount raised in dollars in unit time as a exogenous shock to crowd out the transaction capacity for other existing cryptos based on Ethereum

- Treated group: cryptocurrencies built on the Ethereum Chain
- Control group: cryptocurrencies from non-Ethereum blockchains



3.Identificaiton test of blockchain-based mechanism

The study we use Google Search around ICO 26 events as a proxy for investor attention.

Panel B: Average time, Abnormal Transactions, and Google Search around ICO Events

	(1) Time	(2) AbVolume	(3) Google Search
Treat	0.282**	-0.147***	0.245***
	(2.31)	(-2.73)	(3.47)
Ret [-2, -1]	-0.239**	0.156*	0.084*
	(-2.08)	(1.67)	(1.66)
Size	-0.582***	0.582***	0.149
	(-3.25)	(4.66)	(0.96)
lnAmihud	-0.099	-0.011	0.143*
	(-0.60)	(-0.13)	(1.68)
Turnover	1.304	0.194	0.870*
	(0.88)	(0.23)	(1.65)
Ret [-12,-3]	-0.017**	-0.003	-0.006
	(-2.35)	(-0.35)	(-0.76)
IVOL	-17.162***	9.481**	-0.623
	(-2.88)	(2.31)	(-0.16)
Skewness	0.107	-0.104	0.056
	(1.10)	(-1.58)	(0.60)
Kurtosis	0.010	0.014	-0.006
	(0.51)	(1.25)	(-0.40)
BA growth	-5.905*	1.089	-0.781
	(-1.72)	(0.57)	(-1.03)
Value	-0.002	0.004**	-0.003**
	(-0.78)	(2.53)	(-2.38)
Coin-Event FE	YES	YES	YES
Week-Event FE	YES	YES	YES
Observations	45,768	48,462	48,248
(Pseudo) R^2	0.991	0.841	0.649

1) The Google Search measure may not well proxy for that from traders on Ethereum chain
2) Columns (1) and (2) are also consistent with less investments but not necessarily through blockchain congestion.

4. Elastic Winner-minus-Inelastic Loser strategy

A **portfolio strategy** that combines elastic momentum with inelastic crashes—i.e., buying elastic winners and selling inelastic losers—generate higher and more persistent returns.

- among momentum winners, only those produced by elastic cryptos (i.e., elastic winners) are expected to continuously deliver returns
- the underperformance of inelastic losers should persist longer than standard momentum

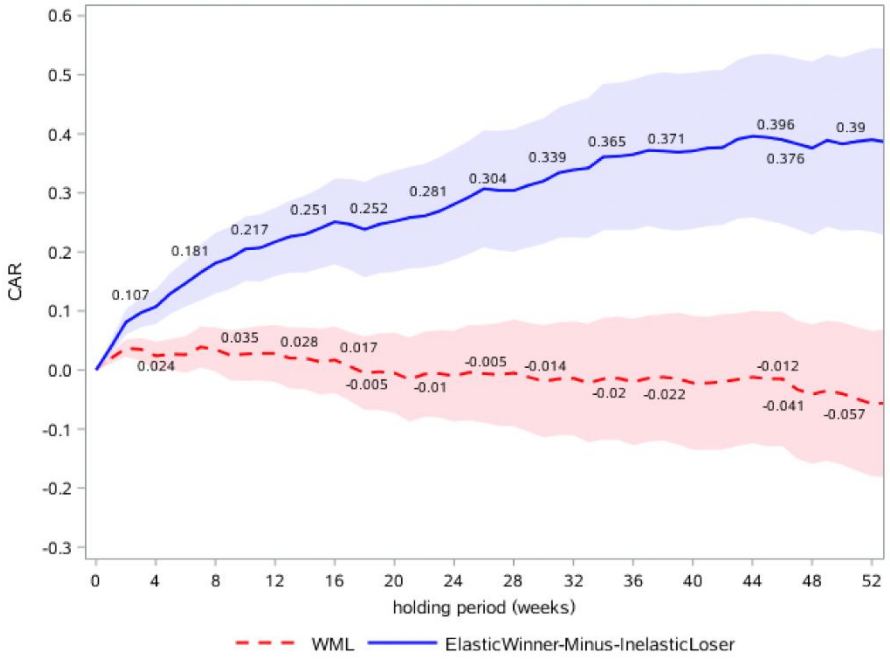
1)Why do we need to combine the elasticity strategy with the momentum strategy?

EMI Average	Momentum Average	EWIL
0.013***	0.014***	0.034***
(3.34)	(3.30)	(5.99)

We could also combine **other strategies** with the momentum strategy to achieve other performance such as size, liquidity, etc.?

4. Elastic Winner-minus-Inelastic Loser strategy

The study hypothesizes that EWIL will deliver higher returns over more extended holding periods than traditional momentum



- Momentum returns peak at a holding period of 9 weeks, while EWIL returns continue to increase even up to 52 weeks
- Why does EWIL last for more than a year? If the EWIL strategy is strengthened by the elasticity strategy, the elasticity vs. inelasticity effect should not have such a long-term effect.
- We need **an explanation** on this impressive finding.

Conclusion

Contribution: new story based on inelastic crashes

Research findings: interesting and impressive

Empirical tests: comprehensive

Main comments: the (in)elasticity measure and the DID shock